

WHAT IS CLAIMED IS:

1. A polynucleotide array comprising:
 - (a) a first set of multiple features each of which has first polynucleotide molecules of at least 400 nucleotides in length; and
 - (b) a second set of features each of which has second polynucleotide molecules of no more than 100 nucleotides in length.
2. A polynucleotide array according to claim 1 wherein the ratio of first set features to second set features is at least 10/1.
3. A polynucleotide array according to claim 1 wherein the ratio of first set features to second set features is at least 20/1.
4. A polynucleotide array according to claim 1 wherein the first polynucleotide molecules are double stranded, and the second polynucleotides are single stranded.
5. A polynucleotide array according to claim 1 wherein the first polynucleotide molecules are from enzymatic processing of one or more longer polynucleotides, and the second polynucleotide molecules are synthetic.
6. A polynucleotide array according to claim 1 wherein the first polynucleotide molecules have a length of at least 500 nucleotides.
7. A polynucleotide array according to claim 1 wherein the first polynucleotide molecules have a length of at least 1000 nucleotides and the second polynucleotides have a length of no more than 80 nucleotides.
8. A polynucleotide array according to claim 6 wherein the lengths of the first and second polynucleotides exclude the lengths of any polynucleotide stilt portions.
9. A polynucleotide array according to claim 1 wherein the array features are arranged in a rectangle with second set features at least at the corners of the rectangle.

10. A polynucleotide array according to claim 1 wherein the array features are arranged in lines with at least some lines having at least two second set features which are spaced apart by at least 70% of the first set features in the same line.
11. A polynucleotide array according to claim 1 wherein at least 70% of a second polynucleotide sequence is not contained within a first polynucleotide sequence.
12. A polynucleotide array according to claim 11 wherein at least 70% of the majority of second polynucleotide sequences is not contained within a first polynucleotide sequence.
13. A polynucleotide array according to claim 1 wherein none of the second polynucleotide sequences is contained within a first polynucleotide.
14. A polynucleotide array according to claim 1 wherein the sequence of a second polynucleotide is contained within a first polynucleotide sequence.
15. A kit comprising:
(a) a polynucleotide array having:
a first set of multiple features each of which has first polynucleotide molecules of at least 400 nucleotides in length;
a second set of features each of which has second polynucleotide molecules of no more than 100 nucleotides in length; and
(b) polynucleotide controls which are, or their complements are, at least 70% complementary to sequences of respective second polynucleotides.
16. A kit according to claim 15 wherein the controls or their complements are at least 90% complementary to sequences of respective second polynucleotides.
17. A kit according to claim 15 wherein the controls targets are labeled.

18. A kit according to claim 15 wherein the ratio of first set features to second set features is at least 10/1.

19. A kit according to claim 15 wherein the ratio of first set features to second set features is at least 20/1.

20. A kit according to claim 15 additionally comprising instructions to expose the array to a sample and the controls or their complements.

21. A kit according to claim 20 wherein first polynucleotide molecules are double stranded and the second polynucleotide molecules are single stranded.

22. A method of fabricating a polynucleotide array comprising:

- (a) forming a first set of multiple features on a substrate each of which has first polynucleotide molecules of at least 400 nucleotides in length; and
- (b) forming a second set of features on the substrate each of which has second polynucleotide molecules of no more than 100 nucleotides in length.

23. A method according to claim 22 wherein the forming of the first and second sets of features comprises depositing drops containing the first and second polynucleotides onto the substrate.

24. A method according to claim 22 wherein the ratio of first set features to second set features is at least 10/1.

25. A method of fabricating a polynucleotide array comprising:

- (a) forming a first set of multiple features on a substrate each of which has first polynucleotide molecules of at least 400 nucleotides in length;
- (b) forming a second set of features on the substrate each of which has second polynucleotide molecules of no more than 100 nucleotides in length;
- the method additionally comprising:
- (c) enzymatically processing polynucleotides to obtain the first polynucleotide molecules; and

- (d) synthesizing the second polynucleotide molecules.
26. A method according to claim 25 additionally comprising evaluating a yield of the enzymatic processing of step (c) for a failed product sequence which has a yield below a predetermined threshold, and synthesizing at least one second polynucleotide of at least 25 nucleotides in length having a sequence the same as a sequence within the failed sequence.
27. A method according to claim 25 wherein a sequence of a second polynucleotide is contained within a first polynucleotide.
28. A method according to claim 22 wherein the first polynucleotides are double stranded and the second polynucleotides are single stranded.
29. A method of using a polynucleotide array of claim 1, comprising:
exposing the array to control targets such that the control targets hybridize at least 100 times more efficiently to respective second features than they to any of the first features.
30. A method according to claim 29 wherein the array is additionally simultaneously exposed to a sample.
31. A method according to claim 29 wherein the control targets are from a kit, or are complements of control polynucleotides from a kit, which kit also contains the array.
32. A method according to claim 30 wherein respective second set features hybridize more efficiently with control targets than any of the first set features hybridize to any control targets.
33. A method according to claim 29 wherein the targets are labeled.
34. A method according to claim 29 wherein the control polynucleotides are from a kit which also contains the array.

35. A method according to claim 29 additionally comprising:
reading the array to obtain an image representing the amount of
polynucleotides which have bound to first and second set features;
evaluating locations of first features in the image using the locations of second
features in the image.
36. A method of fabricating a polynucleotide array, comprising:
enzymatically processing one or more polynucleotides to obtain a set of
polynucleotide molecules in respective fluid samples;
removing solid particles; and
ejecting drops of the fluid samples containing the polynucleotides onto a
substrate through an orifice of a pulse jet, which orifice has an area of less than 1 mm².
37. A method according to claim 36 wherein the orifice has an area of less than
.01 mm².

REFERENCE - GC60260